BRUHATH BANGALORE MAHANAGARA PALIKE

Name of the Agency : **Technical Manager,** KRIDL, Bangalore.

Name of the Work : Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.

Estimate Cost :

QUALITY CONTROL REPORTS TO

ASST. EXECUTIVE ENGINEER
Shettyhalli Sub Division,
BBMP, Bangalore.

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QUALITY CONTROL REPORTS FOR

GRANUALAR SUB BASE (GSB)

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Job No.: CTCE/BBMP/WNo.12/KRIDL/GSB-1/GR/2014-15 Date : 04.07.2014

GRADATION FOR GSB-I (CLOSE GRADED)
IS: 2720 (Part 4)

Client : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manage,** KRIDL, Bangalore.

Name of work : Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014

Date of Testing : 04.07.2014

Sample Source : GSB Mix Plant Bangalore. **Oven Dry Wt (gm) :** 25300

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Specified Limits
75.0	0	0	0.00	0	100
53.0	1125	1125	4.45	95.55	80-100
26.50	6560	7685	30.38	69.62	55-90
9.50	3565	11250	44.47	55.53	35-65
4.75	3420	14670	57.98	42.02	25-55
2.36	2130	16800	66.40	33.60	20-40
0.425	4685	21485	84.92	15.08	10-25
0.075	2645	24130	95.38	4.62	3-10
PAN	1170				
Total	25300				

Remarks: Satisfies MORTH Specifications as per Table 400-1, Grading I

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Job No.: CTCE/BBMP/WNo.12/KRIDL/GSB-1/AL/2014-15 Date : 04.07.2014

ATTERBERG LIMITS TEST FOR GSB (CLOSE GRADED)
IS : 2720 (Part - 5)

Client : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manage,** KRIDL, Bangalore.

Name of work : Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014

Date of Testing : 04.07.2014

As per MORTH Table : 400-11

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit, %	22.00	25.0% Maximum.
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

As per IS: 2720 Part 5

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QUALITY CONTROL REPORTS FOR

WET MIX MACADAM (WMM)

CIVIL-TECH CONSULTANTS AND ENGINEERS

Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/WNo.12/KRIDL/WMM/Gradation/2014-15 10.07.2014

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.

Agency : **Technical Manage,** KRIDL, Bangalore.

Name of Work : Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.

Reference : BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014

Date of Testing : 10.07.2014

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **26000**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	1015	1015	3.9	96.1	95-100
22.4	6150	7165	27.6	72.4	60-80
11.2	5245	12410	47.7	52.3	40-60
4.75	4175	16585	63.8	36.2	25-40
2.36	3520	20105	77.3	22.7	15-30
0.600	2265	22370	86.0	14.0	8-22
0.075	2410	24780	95.3	4.7	0-8

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Job No.: CTCE/BBMP/WNo.12/KRIDL/WMM/AIV/2014-15 10.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	10.07.2014

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	389	387.5	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	87	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	299.5	
4	Aggregate Impact value = percent fines	22.37	22.71	
	100* (W_2/W_1)%			22.54

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/WNo.12/KRIDL/WMM/S-T/2014-15 10.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	10.07.2014

Result : Flakiness Index = **12.53%**

Elongation Index = **13.87%**

Result : Combined Flakiness & Elongation index 26.40%

Comments:

→ Maximum allowable Flakinee & Elongation Index for Wet Mix Macadam is 30%

Note:

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QUALITY CONTROL REPORTS FOR

BITUMINOUS MACADAM

CIVIL-TECH CONSULTANTS AND ENGINEERS

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BM/Bitumen/2014-15 21.07.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS MACADAM MIX

As Per IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manage,** KRIDL, Bangalore.
NAME OF THE WORK	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Laxmipura Main Road from Gurunath layout to BBMP Border W.No.12
DATE OF TESTING	21.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	482.5	482
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17.5	18.00
7. Bitumen content in %	3.50	3.60
8. Average	3.55	

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BM/Bitumen/2014-15 21.07.2014

GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX

As Per IS 2386 and IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manage,** KRIDL, Bangalore.
NAME OF THE WORK	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Laxmipura Main Road from Gurunath layout to BBMP Border W.No.12
DATE OF TESTING	21.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	33.64	6.97	6.97	93.03	90-100
13.2	128.2	26.57	33.54	66.46	56-88
4.75	227.6	47.17	80.71	19.29	16-36
2.36	52.69	10.92	91.63	8.37	4-19
0.3	10.12	2.10	93.73	6.27	2-10
0.075	5.28	1.09	94.82	5.18	0-8

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-04 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
26.5	0	0	0	100	100
19	35.28	7.32	7.32	92.68	90-100
13.2	128.4	26.64	33.96	66.04	56-88
4.75	228.7	47.45	81.41	18.59	16-36
2.36	52.13	10.82	92.22	7.78	4-19
0.3	11.85	2.46	94.68	5.32	2-10
0.075	2.16	0.45	95.13	4.87	0-8

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QUALITY CONTROL REPORTS FOR

BITUMINOUS CONCRETE

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Building & Highway Material Testing Laboratory

NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/WNo.12/KRIDL/BC(QB)/2014-15

18.07.2014

TEST REPORT

CLIENT	:	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	:	**Technical Manager,** KRIDL, BBMP, Bangalore.
NAME OF THE WORK	:	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	:	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SOURCE OF LOCATION	:	Hot mix Plant, Bangalore
DATE OF TESTING	:	18.07.2014

The results of the tests conducted on the bitumen sample for Bituminous Concrete as follows:

Sl.No	Description	Technical Reference	Test Result	Requirement as per IS: 73-2013
1	Penetration at 25^{0}C, 100g, 5 Sec 1/10 mm	IS: 1203-1978 (RA-2009)	68.0	60 to 70
2	Softening point, ^{0}C	IS: 1205-1978 (RA-2009)	47.0	Min. 45
3	Ductility at 27^{0}C, cm	IS: 1208-1978 (RA-2009)	100 >	Min. 50
4	Flash Point, ^{0}C	IS: 1209-1978 (RA-2009)	286	Min. 220

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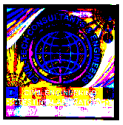

18.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	18.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	302	299	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.35	22.54	**21.95**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/AIV/2014-15 18.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	18.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	379	382	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	88	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	295	294	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	22.16	23.04	22.60

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/AIV/2014-15 18.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	18.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	385	383	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	82	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	303	296	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	21.30	22.72	**22.01**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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ಸಹಾಯಕ ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು
ಶಕ್ತಿಗಣಪತಿನಗರ, ಬಸವೇಶ್ವರನಗರ ವಲಯ
ಬೆಂಗಳೂರು ಮಹಾನಗರ ಪಾಲಿಕೆ
ಬೆಂಗಳೂರು-560079.

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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/AIV/2014-15 18.07.2014

Aggregate Impact Value

IS: 2386 Part IV

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Source / Location	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	18.07.2014

Sl No.	Details	Trial No.		Average
		1	2	
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	386	384	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	81	84	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	305	300	
4	Aggregate Impact value = percent fines			
	100* (W_2/W_1) percent	20.98	21.88	**21.43**

Comments:

→ Maximum allowable Aggregate Impact value for Bituminous Concrete is 24%

Note:

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ಮುಖ್ಯ ಕಾರ್ಯನಿರ್ವಾಹಕ ಅಧಿಯಂತರರು
ಉಪನಗರ, ದಾಸರಹಳ್ಳಿ ವಲಯ
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ಬೆಂಗಳೂರು.

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/Shape.T/2014-15 : 19.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manage,** KRIDL, Bangalore.
Name of Work	: Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 19.07.2014

Result : Flakiness Index = **12.36%**

Elongation Index = **13.83%**

Result : Combined Flakiness & Elongation index **26.19%**

Comments:

→ Maximum allowable Flakinee & Elongation Index for Bituminous Concrete is 30%

Note:

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Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manage,** KRIDL, Bangalore.
Name of Work	: Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 19.07.2014

Result : Flakiness Index = **11.95%**

Elongation Index = **13.26%**

Result : Combined Flakiness & Elongation index **25.21%**

Comments:

→ Maximum allowable Flakinee & Elongation Index for Bituminous Concrete is 30%

Note:

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DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manage,** KRIDL, Bangalore.
Name of Work	: Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 19.07.2014

Civil-Tech Consultants & Engineers Bangalore

Result : Flakiness Index = **12.68%**

Elongation Index = **13.52%**

Result : Combined Flakiness & Elongation index **26.20%**

Comments:

→ Maximum allowable Flakinee & Elongation Index for Bituminous Concrete is 30%

Note:

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ಎಸ್ ಬಿ ಎಂ ಲೇ ಔಟ್, ರಮಣಶ್ರೀನಗರ, ಬೆಂಗಳೂರು.

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NABL - Accredited Laboratory as per ISO / IEC-17025 : 2005

Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/Shape.T/2014-15 : 19.07.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	: **Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	: **Technical Manage,** KRIDL, Bangalore.
Name of Work	: Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	: BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Technical Reference	: IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	: Bituminous Concrete
Date of Testing	: 19.07.2014

Result : Flakiness Index = **11.84%**

Elongation Index = **13.63%**

Result : Combined Flakiness & Elongation index **25.47%**

Comments:

→ Maximum allowable Flakinee & Elongation Index for Bituminous Concrete is 30%

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/Stripping/2014-15 22.07.2014

Stripping Value of Road Aggregates (Static Immersion Test)

IS: 6241

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Type of Mix	Bituminous Concrete
Date of Testing	22.07.2014

Type of binder : 60/70
Percentage of binder used : 5.00% by wt.
Total weight of aggregate : 200 g
Total weight of binder : 10.00 g
Temperature of water-bath : 40° C

Observation Number	Stripping, Percentage	Average, Percentage	Average Retained Coating, %
1	3.1	3.27	96.73
2	3.5		
3	3.2		

Comments:

→ Minimum allowable Aggregate retained coating for Bituminous Concrete is 95%

Note:

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/Sp_Wa/2014-15 22.07.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of the Work	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Type of Mix	Bituminous Concrete
Date of Testing	22.07.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2025	2024	2026	
2	Weight of basket suspended in water	W_2 g	755	755	755	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1270	1269	1271	
4	Weight of saturated surface dry aggregate in air	W_3 g	2011	2007	2003	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_S)$ g	741	738	732	
6	Weight of oven dried aggregate	W_4 g	1998	1995	1992	
7	Specific Gravity	$W_4/(W_3-W_S)$	2.696	2.703	2.721	2.707
8	Apparent Specific gravity	$W_4/(W_4-W_S)$	2.745	2.748	2.763	2.752
9	Water Absorption	$((W_3-W_4)*100)/W_4$	0.65%	0.60%	0.55%	0.60%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Concrete is 2.0%

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ಬೆಂಗಳೂರು ನಗರಾಭಿವೃದ್ಧಿ ಯೋಜನೆಗಳ ನಿಲಯ

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Basaveshwaranagar,
Bangalore-560079.

#23/14, 7th Cross, 3rd Stage, 4th Block, Shakthi Ganapathi Nagara, Basaveshwaranagar, Bangalore-79.
Tele Fax : 23223227, Website : www.civiltechconsultants.com
E-mail : vishwanath.ia@civiltechconsultants.com / info@civiltechconsultants.com

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/Bit/2014-15 22.07.2014

BITUMEN CONTENT DETERMINATION OF BITUMINOUS CONCRETE MIX

AS PER IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manage,** KRIDL, Bangalore.
NAME OF THE WORK	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Laxmipura Main Road from Gurunath layout to BBMP Border W.No.12
DATE OF TESTING	22.07.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	475.5	474
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	24.5	26.00
7. Bitumen content in %	4.90	5.20
8. Average	**5.05**	

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ಸಂ. 80 ನೇ ಕ್ರಾಸ್, ಡೇಂಜರ್‌ಗುಂಟೆ, ಬೆಂಗಳೂರು

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Job No.: CTCE/BBMP/WNo.12/KRIDL/BC/Bit/2014-15 22.07.2014

GRADATION DETERMINATION OF BITUMINOUS CONCRETE MIX

AS PER IS2386 & IRC:SP:11-1984

CLIENT	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
AGENCY	**Technical Manage,** KRIDL, Bangalore.
NAME OF THE WORK	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
REFERENCE	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
SAMPLE I/D	Laxmipura Main Road from Gurunath layout to BBMP Border W.No.12
DATE OF TESTING	22.07.2014

GRADATION AFTER EXTRACTION

Sieve Size in mm	Trail 1				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	474	
19	0	0	0	100	100
13.2	48.53	10.21	10.21	89.79	79-100
9.5	37.28	7.84	18.05	81.95	70-88
4.75	74.65	15.70	33.75	66.25	53-71
2.36	93.25	19.61	53.36	46.64	42-58
1.18	46.82	9.85	63.20	36.80	34-48
0.6	33.15	6.97	70.17	29.83	26-38
0.3	24.89	5.23	75.41	24.59	18-28
0.15	37.62	7.91	83.32	16.68	12-20
0.075	45.15	9.50	92.82	7.18	4-10

Sieve Size in mm	Trail 2				Specified Limits as per MORTH specification table 500-18 (Grading-2)
	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	
19	0	0	0	100	100
13.2	52.87	11.15	11.15	88.85	79-100
9.5	36.93	7.79	18.95	81.05	70-88
4.75	75.18	15.86	34.81	65.19	53-71
2.36	95.46	20.14	54.95	45.05	42-58
1.18	45.28	9.55	64.50	35.50	34-48
0.6	36.13	7.62	72.12	27.88	26-38
0.3	27.82	5.87	77.99	22.01	18-28
0.15	32.95	6.95	84.94	15.06	12-20
0.075	42.98	9.07	94.01	5.99	4-10

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Job No: CTCE/BBMP/WNo.12/KRIDL/BC/Agg/2014-15 22.07.2014

Aggregate Gradation Test

IS : 2386 Part I

Client	**Asst. Executive Engineer,** Shettyhalli Sub Division, BBMP, Bangalore.
Agency	**Technical Manage,** KRIDL, Bangalore.
Name of theWork	Improvemetns to Lakshmipura Main Road from Gurunath layout to BBMP border in Ward No.12 in Shettyhalli Sub Division, BBMP, Bangalore.
Reference	BBMP/AEE/SSD/DZ/PR/2014-15 Dated: 30.06.2014
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	22.07.2014

Total Weight of Sample: **5430** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	525	9.67	9.67	90.33	79 - 100	
9.5	590	10.87	20.53	79.47	70 - 88	
4.75	765	14.09	34.62	65.38	53 - 71	
2.36	746	13.74	48.36	51.64	42 - 58	
1.18	525	9.67	58.03	41.97	34 - 48	
0.600	620	11.42	69.45	30.55	26 - 38	
0.300	615	11.33	80.77	19.23	18 - 28	
0.150	315	5.80	86.57	13.43	12 - 20	
0.075	425	7.83	94.40	5.60	4 - 10	

Total Weight of Sample: **5400** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	740	13.70	13.70	86.30	79 - 100	
9.5	546	10.11	23.81	76.19	70 - 88	
4.75	684	12.67	36.48	63.52	53 - 71	
2.36	478	8.85	45.33	54.67	42 - 58	
1.18	638	11.81	57.15	42.85	34 - 48	
0.600	580	10.74	67.89	32.11	26 - 38	
0.300	540	10.00	77.89	22.11	18 - 28	
0.150	587	10.87	88.76	11.24	12 - 20	
0.075	384	7.11	95.87	4.13	4 - 10	

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